

LEYVRAS, Philippe
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AMENDMENTS TO THE SPECIFICATION:

Please amend the paragraph beginning at page 2, line 4, as follows:

Alternatively a code may also be directly written onto the container without using a label. One technique commonplace in the pharmaceutical industry for directly distinguishing glass ampoules uses differently coloured rings in order to produce code markings. For this purpose, one to maximal five rings of different colours are deposited on the neck of the ampoules. Furthermore up to 8 different colours are used. The limited number of rings and the different colours however do not permit each individual sample to be individualised which would be desirable, but as a rule only permits details with regard to the batch in the manufacturing process. The advantage of the described coding of the ampoules by way of the rings is however the fact that the writing means may be integrated into the filling lines. The colour ring code on ampoules allows only product number, sometimes lot number coding. For vials, the industry uses a combination of a coloured plug and a coloured cap to differentiate product or lot. None of these technologies allow a unique serial number (not enough possibilities).
possibilities)

Please amend the paragraph beginning at page 2, line 17, as follows:

A wipe-proof marking on glass ampoules may be manufactured with screen-printing. With this the code is firstly written onto the ampoules by screen-printing, and then the printing ink is burnt into the ampoules. Until now such glass ampoules had to be manufactured in a separate working process away from the filling installations and prior to the filling process. This however entails considerably more expense since the

code marking until now had to be deposited onto the ampoules am-ampoules pulla-by the manufacturer of the ampoules. This is complicated and makes the filling procedure considerably more expensive.

Please amend the subheading beginning at page 6, line 11, as follows:

Description of the invention-Summary

Please amend the paragraph beginning at page 8, line 8, as follows:

Advantageously immediately following the inscribing operation the readability of the marking is checked by way of a read means, in particular a CCD camera. With this receptacles with an erroneous marking may be rejected immediately, i.e. before they are filled. In those cases where marking occurs after filling, bad parts are immediately rejected, before going to the next production step. In a further development of the method, for producing an improved contrast ratio between the inscribed and inscribed an-non-inscribed glass surfaces the marking is not illuminated directly, but light is introduced into the glass wall of the glass receptacle at a distance to the code marking. In this manner the contrast ratio may be surprisingly improved so much that the marking written into the glass is easily readable. One may reliably recognise the marking by arranging at least one light source above and below and at a distance to the marking and by way of preventing the direct impinging of light onto the marking and the read means by way of a shielding, the marking may be reliably recognised.

Please amend the paragraph beginning at page 11, line 32, as follows:

The device 11 for depositing a code marking shown in the Figures 1 and 2 has a transport device designed in the shape of a carousel 13, a laser system 15 arranged at

a distance to the transport path of the carousel 13, as well as a read means 17. The transport device 13 provides serves for accommodating means 20 (Figure 8) and transports transporting glass receptacles 19 to be coded, e. g. glass ampoules, small glass bottles or vials, in a certain transport direction (arrow 21). The carousel 13 is charged with a glass receptacle 19 at a charging position L by way of a robot arm not shown in more detail, or a known charging device. A high-energy laser light beam 23 of the laser system 15 writes a code marking, marking 15, in particular a matrix code 25 (see Figure 5a-5c and 7) onto the glass surface of receptacle 19 27 at a coding position W which follows in the transport direction. At a subsequent read position R the written code marking 25 is then checked by a read means 17 with at least one CCD camera. If the read code marking corresponds with the sample pattern of the code marking the receptacle 19 in a subsequent filling station which is not shown is subsequently filled with a medication and closed. If the written code marking 25 may not be read without errors, then the receptacle 19 is rejected.

Please amend the paragraphs beginning at page 12, line 7, as follows:

The transport device itself is not the subject-matter of the present invention. The transport device may also be a linear transport means. It is merely significant that according to one preferred embodiment ~~form~~ the glass receptacles 19 to be coded may be unmovably arranged on the transport device relative to this in an accommodating means not shown in more detail. For writing a two-dimensional code 25, this means that the laser light beam 23 needs to be deflected in a first and a second direction. It is

however basically also conceivable to keep the writing beam stationary and instead of this then to move the glass receptacle.

The shown laser system 15 is arranged in a housing 31. In a preferred embodiment it consists of a laser source not shown in more detail, a means 33 for doubling, tripling or quadrupling the laser base frequency so that there results a laser light wavelength of < 365 nm, preferably < 300 nm, as well as an activatable laser beam deflection means, preferably in the form of an activatable scanner mirror 35. The mirror 35 is pivotable about two pivot axes perpendicular to one another, specifically a pivot axis 37 and a pivot axis 39 orthogonal to the axis 37. The scanner mirror 35 may be a ready to use device comprising its own control unit which allows tracking the laser beam according to the speed of an object to be inscribed.

The frequency of a laser beam originating e. g. from a YAG laser with a wavelength of 1060 nm may be increased to a quadruple of this by way of a frequency-quadrupling crystal 33, so that there results a laser light beam of 265 nm. The laser light beam 23 impinges the mirror 35 and then for writing a code marking is deflected by a controlled pivoting of the mirror 35. In the light path after the mirror 35 there is arranged a focussing lens 40 for focussing the deflected laser light beam 23 into a write plane forming also a tangential plane to surface to be inscribed.

According to one advantageous further formation of the invention the read means is a CCD camera 17 as shown in detail in Figure 3. The camera 17 is arranged at a

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distance to the transport device 13 and with respect to the transport path is arranged at roughly the same height as the writing beam 23. At least one light source 41 is arranged at a distance to the detection field 43 of the CCD camera so that the code marking 25 is not directly illuminated. For this purpose there are provided shieldings 45 which shield the light beam with respect to the camera opening and the code marking. By way of this arrangement of the light source 41 it may be achieved that the regions of the glass surface exposed to the laser beam 23 may be significantly differentiated. Surprisingly the contrast of the partly transparent code marking with respect to the bordering, completely transparent glass surfaces may be greatly improved so that the deposited code markings may be reliably detected by the CCD camera. A read apparatus which is suitable for reading a 2D code is for example the 2D code reader of the company Sick AG obtainable on the market under the description ICR 850.

Please amend the paragraph beginning at page 13, line 14, as follows:

The coding device 11 is preferably controlled and monitored by a central computer 47 (Fig. 4). The computer 47 is at least in connection with the transport device 13 (not shown), the laser system 15 ~~system~~ as well as the read means 17. Apart from this the computer may also control the handling systems required for the operation of the coding device as well as the charging and unloading of the transport device.

Please amend the list of reference numerals beginning at page 17, line 13, as follows:

20 21 accomodating means for ampoules